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Assessment of Selected English Colonial Heritage Features for Sustainable Conservation in Kaduna Metropolis, Nigeria

Marcus Balah Ryal-Net, Bogda Prucnal-Ogunsote and Erekpitan Omoikhefe Ola-Adisa

Abstract

Heritage conservation is an avenue for human sociocultural value sustenance. This book chapter establishes the significant heritage values, determines the relative influential index of deterioration as well as assesses the suitable sustainable heritage conservation options within colonial town of Kaduna. Questionnaires were processed based on purposive sampling and administering 80 of them to building industry and allied heritage professionals, having 50 questionnaires that is about 62% dully filled and returned for analysis. The research instrument was validated using face and content analysis, while the Cronbach's alpha reliability test value for internal consistency of questionnaire instrument was established as being greater than 0.7. The study findings affirmed that historic factors were most significant in value of heritage, while government neglect is the most significant cause of deterioration. Correspondingly, heritage value criteria were considered as more significant than heritage deterioration agents in ascertaining the preferred sustainable conservation options. Conclusively, heritage conservation can be achievable by aptly establishing its significant value and undertaking timely deterioration assessment. This study recommended fashioning of conservation policy model by experts that will guide government agencies on conservation programs for sustainable heritages. The model will encourage local community sociocultural and economic partnership for tourism development.

Keywords: colonial, deterioration, heritage, sustainable conservation, value, Kaduna metropolis and Nigeria

1. Introduction

In most parts of the world, colonialism left behind footprints of legacies and heritages with amazing lessons and inspirations to learn and draw from. Although it can be argued that Africa had always had her indigenous knowledge that are mostly anchored on what is considered as 'intangible heritages' [1], colonial heritage features have however had great influence on the social, economic, political and cultural development of most African nations. Ever since then most scholars have tended to model African nations' sociocultural landscapes including the explanation for their causes along the heritages left behind by their colonial masters.

Britain, for example, has a number of bodies and commissions that ensure the preservation of heritage resources and sites. As part of environmental assessment in Britain, developers are mandated to investigate whether or not their development will affect any heritage site, ancient monument or listed buildings [2]. Analysts have often than not based their arguments on the logic that the landscape of a place gives an insight of what has happened there over a given time frame. According to Peter Benton, a principal preservation planner and a member of the American Institute of Architects, he argued that by looking at the geology and landscape of communities and other materials around, you can piece together the history of a place [3]. It is these perceptions that have caused governments across the world to initiate policies and programmes aim at preserving heritage resources and sites.

The heritage of a place, be it material or immaterial and whether indigenous or foreign, is highly valued because it provides invaluable insights into the changing dynamics [4]. In Britain, these bodies and commissions include the English Heritage, National Trust, Historic Buildings and Monuments Commission and English Nature. In many cities of the countries that were colonised, a number of structures were built for administrative and economic convenience by the colonial authorities and are labelled as the memorials of their past [5].


For Nigeria, the heritage landscape is replete with several features both (temporal and in-temporal cum spiritual). In this case the major tangible structures as stated by [6] include Presbyterian Church, Calabar (1846); First storey building, Badagry, Lagos (1845); Egedege N'okaro residence, Benin (1906); and Gobirau minaret in Katsina (Habe dynasty, 250 years ago); others are Tafawa Balewa Square and the National Theatre completed in 1976 for the Festival of Arts and Culture (FESTAC) of 1977. The old secretariat building of Lagos is considered the signature tune for the English colonial/revivalist architectural heritage conservation of the late nineteen and twentieth century and currently one of the listed building in Lagos state [7] (**Table 1**).

There are several other unique heritage sites, buildings and monuments that abound in Nigeria worthy of careful study. Buildings, monuments and sites features are a major part of our national heritage; therefore, could serve as important tourist attractions that reaffirm the need for this study in Kaduna metropolis.

Said et al. [8] argued that post independent Africa seems to have their colonial features ignored just as the colonialists did to those of Africa's past. For heritage documentation, some activities are critical: identifying heritage values, describing them and incorporating the often conflicting principal stakeholders [9, 10]. The identified heritage experts include specialists in social and economic values, tourism experts, environmentalists, historians, planners and developers [11, 12]. Kaduna being the main colonial town of the Northern Nigerian Protectorate had several buildings and monuments that left their mark on the townscape [13]. The colonial heritage features left behind in Kaduna needed to be conserved as has been done in most developed countries of the world since doing so is not only important because they provide a sense of identity in a fast-changing world for future generations but also represent the past history of a nation. Between 1999 and 2006, a number of English historic buildings were lost to the several infill activities that destroyed historic sites and buildings together with their value and the information they contained in Kaduna Government Residential Areas [14]. Although not all of these could have been conserved, most of them were products of high levels of sophistications, knowledge, tradition and history that in many instances took hundreds or thousands of years to develop. The destruction of these properties in most cases came with irreversible losses of the critical heritage identity (design, specifications and construction techniques) contained in them; it would be imperative to designate some of them as being historic and thereby could enable the enactment

S/nos.	Heritage feature	Pictorial schemes	Brief background	Remarks
	Gobirau Minaret, Katsina (1348–1408 as earliest date)		Gobirau Minaret is a historical monument and landmark in Katsina. It was reported to have been built during the reign of Sarki Muhammadu Korau (1348–1408 AD) who was the first Muslim king during the Habe dynasty. Other account argued that it was built during later years, which is contestable considering the enormous support for the later date. The minaret is about 50 feet in height and was originally built to serve for calling Muslim faithful to prayers. However due to its height, it served the strategic purpose of sighting approaching enemies forces	There is this continuous debate about whether this is the first storey building or the Badagry building. While the Gobirau was mainly as a minaret and watch tower, it was not for habitation unlike the Badagry building which was occupied
	Presbyterian Church (1846)		On 10th April, 1846, the pioneer missionary team arrived, Calabar, and set up the first Presbyterian Church under the leadership of Rev. Hope Masterson Waddel. It was then known as the Presbytery of Biafra. The Presbytery of Biafra evolved in 1921 into Presbyterian Synod of Biafra. By 1945, it was handed over to Nigerians, and the completed mission church integration was achieved on 16th June 1960. Thus becoming the Presbyterian Church of Nigeria	It is worthy to note that this mission station came into being at the request of the local elders after some long period of interaction with the sea-faring European traders
	First storey building, Badagry Lagos (1845)		The first storey building in Nigeria had its foundation laid in 1842 and completed in 1845 located at Badagry, Lagos. The building was said to be built by a Church Mission Society (CMS) reverend gentleman named Henry Townsend. The challenge faced by the structure is the urgent need for rehabilitation towards conserving the heritage feature for future generation. Most visitors come to visit the building during important festival around August of each year	The first storey building in Nigeria has remained the oldest known inhabited building in Nigeria, while the Gobirau minerate is a monument of the past Habe dynasty in Katsina

S/nos.	Heritage feature	Pictorial schemes	Brief background	Remarks
	Egedege N’Okaro, Benin City (1903–1905)		The first storey building in Benin city. Its construction was started in 1903 and completed in 1905 by Chief Iyamu, the Ine of Benin. It was a great fit and quite awesome structure compared to its surrounding mud hut landscape	The Egedege N’Okaro is a most visit for any tourist to the Mid-Western Nigeria; particularly for visitors who want to explore the great Benin city wall and moat remains; exploring this residence of over a century is worthwhile
	Old Secretariat building, Lagos (1906)		The Old Secretariat building in Lagos Island was designed and constructed by the Public Works Department (PWD) during the colonial era at the declaration of Lagos as the capital city of the Southern Nigeria Protectorate in 1906. It served as the office for the colonial secretary and accommodated several other ministries. The secretariat is single bank with large corridors, has expansive windows and is structurally made up of cast iron, timber post and brick walls. The building was declared a national monument on 6th August, 1982, by the National Commission for Museum and Monuments	The nature of design and material used for construction provides cover against driving rain along the corridors. The room temperature is also controlled by the wide opening and thick walls further shielded by overhanging roof
	Tafawa Balewa Square, Lagos		Tafawa Balewa Square was initially a race course harbouring memorials for World Wars I and II as well as the Nigeria Civil war. The square occupies about 14.5 hectares (35.8 acres) and was built in 1972 on 45/57 Massey Bamgboshe Street, Lagos. The major unique feature of the square is the four white horses and seven eagles hovering over the entrance façade columns and rooftop, respectively. The square was the venue for the Nigerian independence celebration in 1960	At full capacity, the square can accommodate up to 50,000 spectators at once. It is a major social-gathering place for festivals and ceremonies of note within the community

S/nos.	Heritage feature	Pictorial schemes	Brief background	Remarks
	National Theatre, Iganmu Lagos (1976)		The National Arts Theatre Iganmu, Surulere, Lagos, has remained the dominant centre for Nigerian performing arts since its construction in 1976. It was built mainly for the hosting of Africa's second festival of arts that was held in Nigeria in 1977. Is a major recreational and tourist destination in once in Lagos, Nigeria	The design concept of the theatre was based on the Bulgarian cultural and sport palace

Source: Variously adapted from [6, 7].

Table 1.
Selected heritage buildings across Nigeria.

of appropriate preservation ordinances to protect these significant buildings and monuments before a worst fate befalls them.

This study examined experts' judgement of perceptual values of key colonial structures in Kaduna metropolis which include offices, residences and symbolic monuments. The study takes into consideration key approaches to sustainable heritage conservation which includes preservation, repairs, maintenance, restoration, treatment, dismantling and relocation as well as reconstruction in consultation with users and local communities [15, 16]. Deterioration agents were associated with government neglect; tear and wear; poor level of awareness; vandalism; chemical, thermal, biological and condensational activities; and mechanical and electromagnetic solar effects [9, 12]. However, since value is an underlying rationale for heritage conservation, value perception was restricted to experts in arts history, archaeologist, architects and others who have been identified as critical fresh stakeholders or constituents [17].

Apart from the empirical need to conserve heritage buildings and monuments in Kaduna, studies of colonial features have not had their fair share in the post independent African heritage studies. The need to increase the city's building and monument profile in the country's stock of listed buildings has received attention in recent times. Zubairu et al. [18] opined that as historic as Kaduna metropolis is in the community of historic cities in Nigeria and Africa as a whole, only Lord Frederick Lugard Bridge in Kaduna was a listed structure for Nigeria. This leaves much to be desired considering the vast heritage features that abound in Kaduna as the main colonial town of Northern Nigeria [13]. All these realities call for concerted efforts to improve the image of heritage structures in Nigeria and Kaduna in particular including the necessary tools to make it work from the perspective of Nigerian realities.

The lack of listed building and monument heritage particularly colonial features in Kaduna metropolis is of great concern. Therefore, value perception assessment of significant historic buildings and monuments is therefore a rational step towards sustainable conservation of these properties. The study similarly examined and tackled the fundamental issue of methodological challenges associated with value assessment of historic buildings and monuments as well as the need to contextualise the heritage conservation and tourism need of Kaduna metropolis as a colonial city.

1.1 Objectives of the study

The specific objectives of the study are as follows:

- a. To establish the perceived heritage value significance for sustainable building and monuments conservation in Kaduna metropolis
- b. To determine the perceived effect of deterioration caused by various agents and environment on the heritage buildings and monuments within Kaduna metropolis
- c. To assess the most suitable sustainable conservation options that enriched colonial heritage buildings and monuments within Kaduna metropolis

2. Review of relevant literature

A further review of relevant variables for this study is undertaken to aid in contextualising the specific variables of the study.

2.1 Conservation of heritage

Heritage and conservation are interrelated in a way, as heritage is considered an expression of the sociocultural value product of a people, its conservation ensures the bequeathal to posterity. The research team [19] stated that conservation serves as a medium for architectural and historical heritage revitalisation. Meanwhile, to revitalise the heritages, it is significant to identify and assess the various relationships involved. In this study the relationships are with respect to heritage value, deterioration and their prospect for sustenance. Similarly, [20] contended that conserving urban heritage is growing with better funding; however, he argued that the partial perception of heritage conservation equally has varied scopes. On the other hand, [15] contended that conservation is categorised based on the various physical buildings and spatial relationship. [15, 16] did affirmed that various approaches for sustainable heritage conservation are applicable and include preservation, repairs, maintenance, restoration, treatment, dismantling and relocation as well as reconstruction in consultation with users and local communities. Likewise, [21] maintained that cultural heritage features are made up of buildings, monuments, gardens, cemeteries, landscape and archaeological sites.

2.2 Conservation and sustainability issues

Conservation of heritage building or site is a process of catering for a place so that it can retain its significant historical, architectural, aesthetic and cultural value. Similarly, Gro Harlem Brundtland Commission Report 'our Common Future' in 1987 defined sustainable development that is succinctly paraphrased in [22] as '... meeting the needs of present generation without jeopardizing the ability of future generation to meet their needs'; [23] further reinforced the argument that conservation relates directly to sustainability, while [24] also averred that sustainability is centred around economic, social and environmental parameters.

Studies by [25, 12] as well as [26] variously argued that heritage conservation should incorporate public interest, sociocultural values, as well as environmental parameters. Often the terms sustainable development, conservation and sustainability emphasise connection amongst social equity, economic production and environmental quality, which should be adaptable to heritage setting.

Kaduna as a main Gbagyi settlement was transformed into a major town for all Northerners that housed its colonial-built treasures. Kaduna metropolis was initially settled by mainly colonialist, their dependents, workers from within West Africa and Southern Nigeria Protectorate [5]. Towards entrenching a functional colonial system, structures were built that include private residences, offices, services and symbolic structures as bridges and entrance gates which form the fulcrum of this particular study.

2.3 Heritage buildings and monuments

The International Council on Monuments and Sites (ICOMOS) Venice Charter of 1964 adopted during the 2nd International Congress of Architects and Technicians of Historic Monuments made definite decisions on heritage. During the congress it was advocated that heritage should maintain buildings and monuments to ensure social usefulness, within original scale and historical setting [27, 28]. Furthermore, ICOMOS Charter of 2003, at Victoria Falls, Zimbabwe, argued that structures of architectural heritage lay confronts for restorative finding in terms of nature and history suitable for the cultural context. During the 14th general assembly at Zimbabwe in 2003, they also establish the principles that cover general criteria, research, diagnosis, remedial measures and controls. Specifically, the principles' general criteria cover conservation, reinforcement and restoration; others are value and authenticity, integrity, functional changes, peculiarity of heritage structure and the underlining concept of no action to be taken until benefits can be ascertained proactively. Englehardt [25] argued that built heritage provides the physical space for the nonphysical expressions of culture and constitutes one of the most varied, complex and eloquent manifestations of tangible cultural heritage. Here then is the essence of this particular study towards conserving Kaduna colonial heritage features with specific emphasis on its buildings and monuments.

2.4 Heritage values and deterioration

For any heritage to be conserved for control or minimised decay or deterioration, there is the need to establish its value to the community or society at large. Morgan et al. [29] opined that value is in general the same as meaning or in valuation, meaning confirmed and enhanced with emphasis. Value is here considered as the result of brain conversion of direct experience (immediate perception) into meaning and actionable truth (a secondary judgement or conception). The Allen Consulting Group [30] contended that historic heritage features in Australia are priceless in terms of their value. It is here believed that there is value creation for architectural designs and literature through heritage conservation. This was further elaborated by [31] as they considered heritage value as mainly based on use state rather than the exchange rate. Heritage value in this context has to do with historical, architectural, political, sociocultural, technological and economic value of the heritage features within Kaduna metropolis.

Building deterioration on the other hand has to do with its material component or finishes that do not meet its initially acceptable performance criterion. Mydin et al. [12] stated that often buildings suffer from defects that range from cracks, water penetration or human activity-based deterioration. Factors considered as responsible for deterioration of heritage buildings are broadly classified as natural (environmental) and man-made (social) [9, 12, 32]. It is these key issues that underlay the concern of this paper and have been articulated for enhanced perception and applicability.

3. Research methodology

The study heritage features are mainly along Ali Akilu way through Ahmadu Bello way to Junction road as well as Independence way linking back to Junction road. The choice of these areas/routes was due to their historical place as the core segment of the town during colonial era. These routes also harbour virtually all the colonial administrative features of the 1900 to 1960 period in Kaduna metropolis. Stratified purposive sampling of building heritage and monuments within Kaduna metropolis was made. With the aid of convenience sampling method, a sample design of selected heritage and allied professionals was made [33]. A total of eighty (80) questionnaires were administered to various respondents in the built environment and experts in heritage and conservation within Kaduna metropolis. Fifty (50) of the questionnaires were duly filled and returned with the help of four research assistants, while three (3) were returned but not duly filled thus were considered invalid. This will aid in ascertaining the respondent perception in respect to value, deterioration and suitable sustainable conservation.

Feedback on the questionnaire was provided on its appropriateness as well as information presented (face and content validity test) to ascertain whether the main issues were effectively communicated [34]. The questionnaire instrument employed used internal consistency reliability to assess the results across the different items [35]. The instrument was shown to have value range of 0.788 for deterioration, 0.876 for sustainable conservation options and 0.903 for heritage value using Cronbach's alpha reliability test. Therefore, since the Cronbach's alpha values are all greater than 0.7, it shows that the instrument is reliable for obtaining information from respondents [24, 36].

For this study reflective influence index (RII) tool was used to analyse objectives as in Somiah, Osei-Poku and Aidoo (2015). Below is the formula for the various analyses as utilised for this particular data set collated from respondents:

$$RII = \frac{1n_1 + 2n_2 + 3n_3 + 4n_4 + 5n_5}{5(n_5 + n_4 + n_3 + n_2 + n_1)} \times \frac{100}{1}$$

where RII (%) is the relative importance index of each factor, while n_1 , n_2 , n_3 , n_4 and n_5 are the numbers of observed frequency. According to the research instrument, '1' represents highly insignificant value (HIV); '2' represents insignificant value (IV); '3' represents moderately significant value (MSV); '4' represents significant value (SV); and '5' represents highly significant value (HSV).

4. Results and analysis

The colonial administration core buildings identified and used in this study are Hassan Katsina (State) House, Lugard Hall building, Lord Lugard Residence/Water Tower, Secretariat Complex and Magajin Gari. The monuments on the other hand are the Northern Entrance City Obelisk, Kaduna Railway Junction Steel Bridge and the Lord Lugard Bridge.

4.1 Selected heritage buildings and monuments in Kaduna metropolis

Below is the description of these heritage buildings and monuments stating their basic features with pictorial illustrations.

Hassan Katsina State House Complex, along Kawo way, was an administrative office building used since the colonial period and currently serves as the office of His Excellency the Deputy Governor of Kaduna state. The feature within the



Figure 1.
Hassan Katsina State House with banquet hall at the background.

complex as you enter the main gate is the banquet hall that serves as the state for major occasions (**Figure 1**). Its design is an integration of the traditional Hausa Architecture and utilisation of colonial-styled materials and skill craftsmanship for its design and construction.

Kaduna Commemorative Entrance Obelisk is mainly made up of well-carved stoneworks at the Northern entrance of the city just by the entrance of the old Nigerian Defence Academy (NDA). It was erected to commemorate the visit of Her Royal Majesty Queen Elizabeth and His Highness the Duke of Edinburgh to Kaduna in February, 1956 (**Figure 2**). Recently it was demolished and relocated to allow for the expansion of the major road artery to the town from the northern axis from 4 to 6 lanes. The initial concept was maintained, and the old stones were also utilised with additional stoneworks crafted in similar fashion as those of the initial commemorative entrance monument.

Lord Lugard Hall is one of the major symbols of the great history of Kaduna town from colonial times to post independence. It served as the house of chiefs and later translated to the present Kaduna State legislators House of Assembly (**Figure 3a and b**). It is strategically located just off Ali Akilu road along the old Coronation road presently Independence way that lings to the State Secretariat Complex.

Lord Lugard Residence/Water Tower is located off Coronation Avenue present day Independence way just adjacent the Lugard Hall; it is currently vandalised and laid bare on the pretence of government rehabilitating the historic residence. The house is a duplex situated on an expand of land that has been subject to several litigation towards being excised (**Figure 4a and b**). The last administration in the state gave out the contract for the rehabilitation of the Lugard residence; unfortunately it became a pretext for vandalised very antique materials available in the building. This was more serious with respect to doors and windows including ceilings and the roof structure/lining. Recently, the current government has commissioned another set of consultants to produce a proposal towards restoration and adaptation for museum with prospect as a major tourist feature for the town. Just beside the residence is the Water Tower that is used to serve the Lugard complex and often used as a watch tower during the early days of Kaduna city development shown in **Figure 4c**.



Figure 2.
Kaduna Entrance Obelisk at old NDA Junction around Federal Court of Appeal.



Figure 3.
(a) Lugard Hall currently serving as Kaduna State legislative House of Assembly and (b) Lugard Hall entrance gate.

State Secretariat Complex along the Independence way is a collection of very interesting and unique colonial heritage buildings that housed the Civil Service Ministries then and now. The ministries currently being housed include Education, Economic Planning and Finance (**Figure 5a and b**). **Figure 6** is showing the ministry of Justice and Ministry of Water Resources. Across the road directly opposite these ministerial complexes are two other ministries. They are the Ministry of Health and Women Affairs in **Figure 7a and b**. Most of the buildings have undergone some form of renovation, particularly the replacement of roofing structure and linings. The main building structure is still intact and wonderfully preserved in its initially built form.

The Magajin Gari Complex is made up of the Local Government Secretariat and the Sharia courts (**Figure 8a and b**). It was formally the centre for the Northern Nigeria Native Authority administration. The architecture is distinctively made up



Figure 4.
(a and b) Lord Frederick Lugard residence as you approach and the roof trusses showing well-seasoned timber bolted and secured for about a century. (c) Lord Frederick Lugard residence Water Tower often used as a watch tower during early days of Kaduna township development.

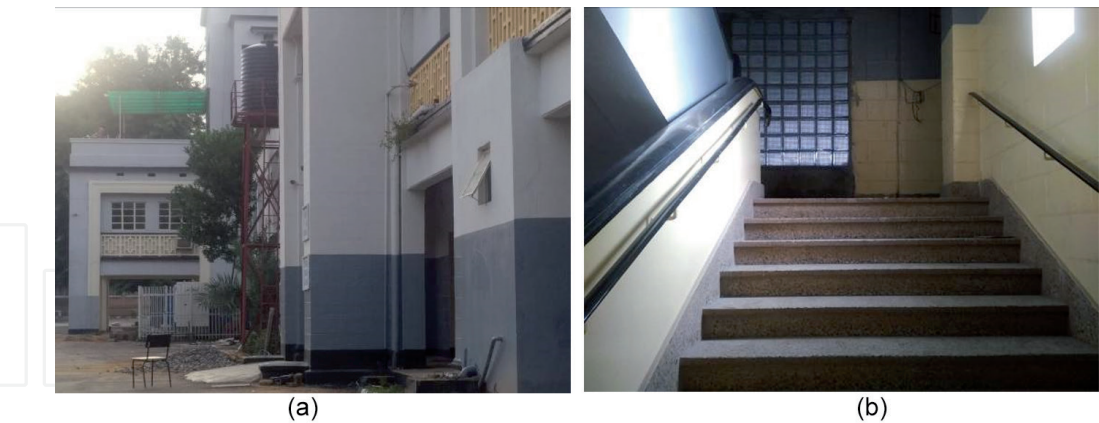


Figure 5.
(a) Ministry of Education at the background and the Ministry of Economic Planning and Finance at the foreground and (b) the stairs being renovated at the Education section.

of traditional Hausa form, domes, arches, decorative motifs and varied pinnacles (Zankwaye). These pinnacles were an extension of the parapet walls in a traditional building and are basically symbolic manifestation of aesthetic elegance in traditional architecture. These became so because they have lost their initial function as stake around which master builders dangle rope ladder for climbing roof or plastering of building facades.

Lugard Bridge is a very important steel bridge historical monument that was first constructed in 1904 at Zungeru but brought into Kaduna when the colonial master relocated the Northern protectorate headquarters to Kaduna (**Figure 9a and b**). It is



Figure 6.
(a) Corridor along the Ministry of Water Resources and (b) Ministries of Justice at the background and Water Resources at the foreground in need of renovation.



Figure 7.
(a) Kaduna state Ministry of Health and Human Resource building and (b) Kaduna State Ministry of Women Affairs building at the foreground.



Figure 8.
(a) The Kaduna North Local Government Area building and (b) Shariah Court of Appeal as part of Magajin Gari Native Authority Administrative building.

presently sited at the old Kaduna Garden now Hassan Katsina Park. Was re-erected in 1954 and has been there since then along the swimming pool road beside the old shooting range.

Kaduna Railway Junction Steel Bridge, over river Kaduna, is linking the two parts of Kaduna metropolis (North and South). It is quite a unique view of excellent steel works on concrete columns running parallel to the main arterial road linking



Figure 9.
(a) Lord Lugard Bridge at Gamji Gate showing the steel frame across one of the streams to river Kaduna and (b) bridge showing the timber planks serving for foot passage.



Figure 10.
(a) Railway line bridge across river Kaduna and (b) intricate steel works carrying the rail line across river Kaduna.

the two parts of the city made up of concrete bridge as you journey daily from one end of town to the other (**Figure 10a and b**).

4.2 Analysis of heritage value significance in Kaduna Metropolis

Table 2 displays RII values of Kaduna heritage building and monument value significance; it was suggested that heritage buildings were ranked the first with significant influence on the heritage value, followed by heritage monuments. Similarly, historical factors were ranked the highest variable under heritage building and monument categorisation, being critical variable that influence the heritage value of heritage building and monuments and economic factors as being the least significantly valued by respondents.

4.3 Analysis of agents that cause building and monument deterioration

Table 3 revealed that government neglect being ranked the highest is considered the most significant agent that causes building and monument deterioration, followed by tear and wear of building and monument deterioration; then lack of public awareness; vandalism; chemical, thermal, biological and condensational activities; and mechanical and electromagnetic solar effects. The least agents that significantly influence the deterioration of buildings and monuments are considered as electromagnetic solar action.

	HIV	IV	MSV	SV	HSV	RII (%)	Rank
Heritage building						71.4	First
Historical	3	8	1	9	29	81.2	
Architectural	1	6	10	16	16	76.3	
Political	4	7	5	19	15	73.6	
Sociocultural	1	8	13	21	7	70.0	
Technological	3	13	10	17	7	64.8	
Economic	4	11	17	10	8	62.8	
Heritage monuments						68.7	Second
Historical	4	4	7	12	23	78.4	
Architectural	1	10	8	18	13	72.8	
Political	1	9	18	17	5	66.4	
Sociocultural	2	9	18	14	7	66.0	
Technological	5	6	14	19	4	64.6	
Economic	6	6	18	13	7	63.6	

Note: highly insignificant value, HIV (1); insignificant value, IV (2); moderately significant value, MSV (3); significant value, SV (4); and highly significant value, HSV (5).

Table 2.
RII of Kaduna heritage building and monument value significance.

Agents that cause deterioration	HI	IV	MS	S	HS	RII (%)
Government neglect	3	2	3	15	27	84.4
Tear and wear of usage	2	2	7	19	19	80.8
Lack of public awareness	1	4	6	21	17	80.0
Vandalism	3	9	6	14	17	73.5
Chemical	1	8	18	6	15	70.8
Thermal	0	8	18	9	12	70.6
Biological	3	8	18	9	12	67.6
Condensation activities	2	13	11	16	8	66.0
Mechanical	2	11	15	10	9	65.5
Electromagnetic solar	3	16	12	9	9	62.0

Note: highly insignificant, HI (1); insignificant, I (2); moderately significant, MS (3); significant, S (4); and highly significant, HS (5).

Table 3.
RII of agents that causes building and monument deterioration.

4.4 Options for sustainable conservation that engender heritage buildings and monuments

Table 4 depicts the RII values of options for conservation that engender heritage buildings and monuments in Kaduna state. It is determined that heritage building ranked first in significantly influencing the conservation works, followed by heritage monuments. Renovation was ranked the highest variable under heritage building as critical variable that influence the conservation works of heritage.

Heritage and conservation options	HI	I	MS	S	HS	RII (%)	Rank
Heritage building						75.4	First
Maintenance and treatment (renovation)	2	4	1	15	27	84.9	
Repairs of damaged sections	1	5	6	17	21	80.8	
Preservation (maintain fabric)	5	4	4	12	25	79.2	
Restoration (return to earlier known state)	2	6	9	7	23	78.3	
Adaptation (change function)	2	9	16	12	6	64.9	
Reconstruction	6	9	12	12	8	63.0	
Heritage monuments						72.2	Second
Preservation (maintain fabric)	2	4	9	13	22	79.6	
Maintenance and treatment(renovation)	3	3	9	15	19	78.0	
Repairs of damaged sections	3	4	12	13	18	75.6	
Restoration (return to earlier known state)	3	10	9	7	21	73.2	
Reconstruction	7	9	11	9	11	63.4	
Adaptation (change function)	2	13	13	15	4	62.6	

Note: highly insignificant, HI (1); insignificant, I (2); moderately significant, MS (3); significant, S (4); and highly significant, HS (5).

Table 4.
Options for conservation works of heritage buildings and monuments.

Preservation (maintain fabric) is ranked highest variable for heritage monuments, being a critical factor that influenced the conservation works based on established value and deterioration effect on heritage monuments. Reconstruction and adaptation (change in function) for buildings and monuments, respectively, were considered the least options for heritage conservations of English colonial buildings in Kaduna metropolis.

5. Findings and discussions

The study findings and discussions can be surmised as:

1. Heritage buildings were considered more significant in value than monuments; this could be mainly due to utilitarian perception by respondents than valuation. In both buildings and monuments, the historical value is considered the most significant as these features are basically from the colonial past and being seen and considered as such, while the economic valuation was seen as least significant as most of these structures currently are not particularly being use for any financial benefit. In fact, even the railway infrastructures which used to be the economic nerve of the colonial era is no longer being seen as such. There will therefore be need for strategic exposure of younger generation to some of these colonial heritage features and their historical significance if these features will have a future (Scerri, Edwards and Foley, 2016).
2. The major causes of building and monument deterioration were established as being government neglect which could be based on the fact that all of the structures are currently serving various government agencies. Meanwhile,

considering the paucity of funds, conservation of heritage is not given appropriate consideration based on government scale of preference. On the other hand, the minimal deterioration caused by electromagnetic and solar effect on monuments could be attributed to the nature of most of the feature design and specifications. In the design there was extensive provision of veranda, corridors and recesses on most openings; as well as high-quality and durable materials were specified and used during construction. While the government is considered the most critical culprit in heritage deterioration, the other side of the challenge will be that most other stakeholders may stand aloof without bringing to bear their expertise as well as communal consideration in conserving the features.

3. Heritage buildings have higher relative influence index of 75.4, with monuments having 72.2 on sustainable conservation options. Similarly, maintenance and treatment (renovation) conservation option have an index of 84.9 for buildings and 79.6 for monuments in Kaduna metropolis.
4. The option for heritage building conservation has the highest reflective influence index (75.4) since most respondents are more conversant and interact with the buildings more frequently than they do with monuments (72.2). In fact, most monuments within the study area are either abandoned or have no active significance in the daily life of the city dwellers, therefore making them seem less attractive for conserving than the buildings that are currently being used as offices and other administrative accommodation. The building heritage maintenance and treatment (renovation) was most significant at 84.9 option for conservation as most of the buildings materials are dying and rarely in used. Currently some of them are being demolished and redeveloped using less responsive design and specification options, hence the preference of professional for this option. The Monuments most preferred option for conservation was considered as preservation (maintaining of the fabric) at 79.6 since such materials are mostly not available or being used in such construction currently. Thus the significance of preserving the heritage features for posterity is towards serving as major tourist site now and in the future. Reconstruction of buildings was considered the least option for conservation and adaptation (change of function) for monument as such action could easily undermine the significance of the heritage features and their place as historical legacies. The respondents' perception of the building value is core to any conservation work than the features' level of deterioration. This further affirms the place of value in heritage conservation as variously argued (Mydi, Ramli and Awang, 2012).

6. Conclusion and recommendations

In conclusion, the study was able to ascertain the place of heritage buildings and monuments for colonial Kaduna metropolis. This was done through integrating the key heritage value indicators and deterioration agents to determine most suitably significant heritage sustainable conservation options. By this, the study set in motion an evolving trend of value rating and deterioration assessment model. This model if adopted can enable forecasting suitable conservation options for enhanced tourism activities as well as points direction for prospective architecturally and historically significant developments. Here from further detail,

studies could be undertaken to ascertain specific heritage building and monument value as well as their status of deterioration for the various stakeholders' appropriate action. More purposeful sustainable heritage buildings and monuments are attainable by careful conservation measures on each heritage structure depending on its requisite need.

Based on study finding, the following recommendations are hereby presented as follows:

1. Heritage experts are to evolve acceptable value significance factors for heritage buildings and monuments in Kaduna metropolis for colonial buildings.
2. Government agencies occupying heritage buildings should be mandated to produce and adhere to professionally developed maintenance manual for all buildings and monuments with the experts' inputs.
3. Historic relevance of each monument should be periodically highlighted to further enlighten people on their significance so that heritage monuments conservation can be brought to the fore.
4. Adopt a comprehensive conservation template for all heritage features as an integral metropolis tourism package for possible generation of financial resources that can be used for conservational activities.

Finally, this submission supposes that a more sustainable heritage conservation can be attained and maintained with periodic value reassessment as well as establishment of actual deterioration status of each feature for the benefit of posterity.

Author details

Marcus Balah Ryal-Net*, Bogda Prucnal-Ogunsote and
Erekpitan Omoikhefe Ola-Adisa
Department of Architecture, Faculty of Environmental Sciences, University of Jos,
Nigeria

*Address all correspondence to: ryalnetmarcus@gmail.com

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References

- [1] Munyaradzi M. Indigenous knowledge and public education in sub-Saharan Africa. *African Spectrum*. 2015;**50**(2):57-71
- [2] CIRIA. Guide to the Management of Building Refurbishment: Report 133. London: CIRIA; 1994. Retrieved from: <https://www.shu.rl.tallis.com/>
- [3] Michael B, Nancy F, Jason V. Becoming and Urban Planner: A Guide to Careers in Planning and Urban Design. New Jersey, USA: John Wiley & Sons Inc; 2010
- [4] Bendix RF. Patronage and preservation: Heritage paradigms and their impact on supporting “Good Culture”. In: Adell N, Bendix RF, Bortolotto C, Tauschek M, editors. *Between Imagined Communities and Communities of Practice: Participation, Territory and the Making of Heritage*. Vol. 8. Gottingen: Gottingen University Press; 2015. pp. 219-234
- [5] Bununu YA, Ludin AN, Hosni N. City profile: Kaduna. *Cities*. 2015;**49**:53-65. Available from: https://www.researchgate.net/publication/280614102city_profile_Kaduna
- [6] Wahlay H. Top 10 historical buildings in Nigeria. *Nairaland Forum*. 2015. Available from: www.nairaland.com/2142894/top-10-historical-buildings-Nigeria
- [7] Opara C. The old secretariat: In need of revival. *Ekotecture Quarterly*. Online Magazine for NIA Lagos Chapter. 2017
- [8] Said H. The history and current situation of cultural heritage care in sub-Saharan Africa. *Asian and African Studies*. 1999;**8**(1):91-100
- [9] Mostafa SL. Historical Cairo: Causes of deterioration and suggestion for preservation [Internet]. nd. Available from: www.ICOMOS.org/publications/wash101 [Accessed: 20 May, 2017]
- [10] Torre M, Mason R. Assessing the Values of Cultural Heritage. Los Angeles: Getty Conservation Institute; 2002
- [11] DPIPWE. Assessing Historic Heritage Significance, Version 5. Tasmania, Australia: Department of Primary Industries, Parks, Water and Environment; 2011
- [12] Mydin MAO, Ramli M, Awang H. Factors of deterioration in building and the principles of repair. *ANUL XIX, NR.1*. 2012. Available from: Anale-Ing-Uem.Ro/2012/39.Pdf
- [13] Qurix WB, Suleiman E. Transformation and continuity of architecture in Kaduna city, Nigeria, from 1900-2000. *Canadian Open Environment and Earth Science Journal*. 2015;**1**:1-16. Available from: <http://www.crpublish.com/journals.php> [Accessed: 03 August, 2017]
- [14] Arinde SH. An Analysis of Patterns and Implications of Infill Development in GRAs of Kaduna. Zaria: Department of Urban and Regional Planning, Ahmadu Bello University; 2006
- [15] Hadri K, Boussaa D. Architectural and urban conservation in the United Arab Emirate. *Open House International*. 2007;**32**(2):16-26
- [16] Harun SN. Heritage building conservation in Malaysia: Experience and challenges. *Procedia Engineering*. 2011;**20**:41-53. During the Second International Building Control Conference
- [17] Jokilehto J. A History of Architectural Conservation. Oxford: Butterworth-Heinemann; 2018

- [18] Zubairu SN, Abdulrahman ME, Ayuba P, Adedayo OF. A study of listed buildings and monuments in Nigeria (1956-2006). *Journal of Economics and Sustainable Development*. 2012;3(7): 89-99. Available from: <http://www.iiste.org> [Accessed: 20 April, 2017]
- [19] Research Team. Conservation and revitalization of historic buildings. Liberal Studies Teaching Kit for Senior Secondary School Curriculum. Community Project Workshop, Faculty of Architecture, The University of Hong Kong
- [20] Rojas E. The conservation and development of the urban heritage: A task for all social actors. *City and Time*. 2007;3(1):4. Available from: <http://www.ct.ceci-br.org> [Accessed: 23 May, 2017-05-23]
- [21] CPWD. A Handbook on Conservation of Heritage Buildings. New Delhi, India: Publish by Directorate General Central Public Works Department; 2013
- [22] World Commission on Environment and Development. *Our Common Future*. Oxford, UK: Oxford University Press; 1987
- [23] Theis T, Tomkin J, editors. *Sustainability: A Comprehensive Foundation*. Houston, Texas: Rice University, Connexions; 2012
- [24] Allu ELA. Climate change and buildings in Nigeria: A search for mitigation and adaptation framework for residential design guide [an unpublished thesis]. Leicester, United Kingdom: Partial Fulfilment of the Requirement for the Doctor of Philosophy in De Montfort University; 2014. Submitted
- [25] Englehardt RA. "First principles" in conservation: The UNESCO Asia-Pacific heritage award. *APT Bulletin: Journal of Preservation Technology*. 2010;41(2-3):57-65
- [26] Fisher T. Ethics and architectural practice. In: Hayes RL, editor. *The architect's hand Book of professional practice*. 15th ed. New Jersey, USA: American Institute of Architects: John Wiley and Sons, Inc; 2015
- [27] ICOMOS. International Charter for the conservation and restoration of monuments and sites (The Venice charter), Paris, France: ICOMOS. 1964; Available from <http://www.icomos.org/charters.nara-e.pdf>
- [28] Zaryn A. "The first general assembly of ICOMOS 1965 Cracow Poland: Regulations, bylaws and National Committees" in thirty years of ICOMOS. *Scientific Journal*. 1995;25:3-6
- [29] Morgan MH. *Vitruvius: The Ten Books of Architecture*. London: Harvard University Press; 1914
- [30] The Allen Consulting Group. *Valuing the priceless: The value of historic heritage in Australia*. Research Report 2. Sydney: Heritage Chairs and Officials of Australia and Newzerland; 2005
- [31] Edwards R, Holland J. *What Is Qualitative Interviewing?* London: Bloomsbury; 2013
- [32] UNESCO. *Preserving and Restoring Monuments and Historic Buildings*. Paris: United Nation Educational, Scientific and Cultural Organization; 1972
- [33] Suri R, Rao J. Impact of spiritual marketing on different segments of tourist and their evaluation of the site. *Journal of Bussiness and Eeconomic Policy*. 2014;1(1):26-34
- [34] The Allen Consulting Group. *Boat industry training market analysis and conceptual model*. In: Report. Melbourne: Department of Education and Early Childhood Development; 2013

[35] Gusen JN. Information and Communication Technology. Department of Science and Technology, University of Jos; 2017

[36] Travakol M, Dennick R. Making sense of Cronbach's alpha. International Journal of Medical Education. 2011;2:53-55

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